

Topics for Exam 3

1. Some Important Distributions

- 1.1 Normal Distribution
- 1.2 Poisson Distribution
- 1.3 Chi–Squared Distribution
- 1.4 t Distribution
- 1.5 Gamma Distribution

2. Limiting Distributions

- 2.1. The Poisson distribution as a limit of binomial distributions.
- 2.2. Convergence in distribution
- 2.3. mgf Convergence Theorem
- 2.4. Convergence in probability
- 2.5. Chebyshev’s Inequality and the Law of Large Numbers

3. The Central Limit Theorem

- 3.1. Random samples
- 3.2. The sample mean and sample variance
- 3.3. Unbiased estimators
- 3.4. Consistent estimators
- 3.5. Confidence interval estimates

Relevant sections in the text: 5.4, 5.6, 5.7, 6.2, 6.3, 8.2, 8.3, 8.4 and 8.5.

Relevant assignments: 17, 18, 19, 20, 21 and 22.

Important Concepts

Convergence in distribution, convergence in probability, limiting distribution.

Important Skills

- 1. Know how to apply the mgf convergence theorem.
- 2. Know how to apply the central limit theorem.
- 3. Know how to use Chebyshev’s Inequality.
- 4. Know how to compute confidence intervals.